INSPEC 4785322 C9411-3355F-011

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| Doc Type: | Conference Paper |
| Title: | Arc welding seam tracking system based on artificial neural networks |
| Authors: | Kreft, L.; Scheller, W. |
| Affiliation: | Tech. Univ. Hamburg-Harburg, Germany |
| Conf. Title: | Second International Conference on 'Intelligent Systems Engineering' (Conf. Publ. No.395) p. 177-82 |
| Publisher: | IEE London, UK Date: 1994  xiii+466 pp. Country of Publication: UK ISBN: 0 85296 621 0 |
| Language: | English Conf. Date: 5-9 Sept. 1994 Conf. Loc: Hamburg-Harburg, Germany Conf. Sponsor: British Comput. Soc.; Directorate Gen. Ind. CEC; Gesellschaft fur Informatik (GI); et al |
| Treatment: | Practical |

Abstract:    A new approach towards controlling an arc welding seam
  tracking system based on process-oriented data is presented; an
  artificial neural network is the central controlling element. Special
  features of neural networks, such as trainability, abstraction
  capability and fault-tolerance give this controlling system
  significant advantages. The adaptation of the system to new welding
  tasks has been simplified substantially in comparison with
  conventional approaches: analysing the new process parameters and
  programming the system are replaced by producing reference data from
  the new welding process and subsequent automatic learning of an
  artificial neural network. Results on the basis of a quality function
  are presented. (13 Refs.)

Classification: C3355F (Control applications in assembling); C3120C
  (Spatial variables control); C7420 (Control engineering computing);
  C5290 (Neural computing techniques)
Thesaurus: Arc welding; Intelligent control; Learning systems; Neural
  nets; Position control; Tracking
Free Terms: Arc welding seam tracking system; Neural networks;
  Trainability; Abstraction capability; Fault-tolerance; Process
  parameters; Automatic learning; Quality function
  Item Availability: CD-ROM.

INSPEC 4730738 B9409-8620-006 C9409-7420-046

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|---|---|
| Doc Type: | Conference Paper |
| Title: | Weld modeling and control using artificial neural networks |
| Authors: | Cook, G.E.; Barnett, R.J.; Andersen, K.; Strauss, A.M. |
| Affiliation: | Eng. Sch., Vanderbilt Univ., Nashville, TN, USA |
| Conf. Title: | IAS'93. Conference Record of the 1993 IEEE Industry Applications Conference Twenty-Eighth IAS Annual Meeting (Cat. No.93CH3366-2) p. 2181-9 vol.3 |
| Publisher: | IEEE New York, NY, USA Date: 1993  3 vol. xxxi+2489 pp. Country of Publication: USA ISBN: 0 7803 1462 X CCC: 0 7803 1462 X/93/$03.00 |
| Language: | English Conf. Date: 2-8 Oct. 1993 Conf. Loc: Toronto, Ont., Canada Conf. Sponsor: IEEE |
| Treatment: | Application; Practical; Theoretical/Mathematical; Experimental |

Abstract:     Artificial neural networks were evaluated for monitoring
   and control of the variable polarity plasma arc welding (VPPAW)
   process. Three areas of welding application were investigated: weld
   process modeling, weld process control, and weld bead profile
   analysis for quality control. Experiments and analysis confirm that
   artificial neural networks are powerful tools for analysis, modeling,
   and control applications. They are particularly attractive in view of
   their capabilities to process nonlinear and noisy data, learn from
   actual welding data, and execute at relatively high speed. It is
   shown that neural networks are capable of modeling parameters of the
   VPPAW process to on the order of 10% accuracy or better. The same was
   observed when neural networks were used to select welding equipment
   parameters and the resulting bead geometries were estimated. These
   performance figures suggest that a VPPA welding control system can be
   implemented based on neural network models and control mechanisms.
   (12 Refs.)

Classification: B8620 (Power applications in manufacturing industries);
   B7210B (Automatic test and measurement systems); B0170L (Inspection
   and quality control); C7420 (Control engineering computing); C3355F
   (Control applications in assembling); C5290 (Neural computing
   techniques); C7410H (Computerised instrumentation)
Thesaurus: Arc welding; Computerised monitoring; Learning [artificial
   intelligence]; Neural nets; Process computer control; Quality control
Free Terms: Nonlinear data; Learning; Artificial neural networks;
   Monitoring; Variable polarity plasma arc welding; Process modeling;
   Process control; Weld bead profile analysis; Quality control;
   Applications; Noisy data; Accuracy; Performance
   Item Availability: CD-ROM.

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Search Options:
    Search for both singular and plurals: YES
    Search for spelling variants         : NO
    Display intermediate result sets     : NO


 Num     Search                                                          Hits
 #1      arc weld? and (robot? or manipulator?) and teach?                 2
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